DATA SYSTEM CONTROLLER (Data logger)

General Description:

Microprocessor based data acquisition system to acquire, process, store, report, and telemeter data in a multitasking environment. Base unit shall be self-contained with onboard all function keypad and color LCD display. Unit must be fully compatible with ADEM's current polling software, *E-DAS Ambient for Windows version 5.52* produced by:

Environmental Systems Corporation
200 Tech Center Drive
Knoxville, TN 37912
(865) 688-7900

Specifications:

- The data logger must have a minimum of sixteen analog voltage input channels.
    A. Each analog input must be differential with programmable gain amplifier.
    B. Analog inputs must have 14 bit resolution or better.
    C. Analog input front-to-back accuracy must be +/-0.05% of full scale or better at normal room temperature (20 degrees C); +/- 0.10% of full scale or better over the full temperature range.
    D. Analog inputs must offer, as a minimum, full scale ranges of +/-100mV, +/-1V, +/-5V, and +/-10V.
    E. Analog input impedance must be greater than 10 megaohms.

- The data logger must have at least sixteen digital output channels to furnish switch (on command of logger software or operator instruction) closures for extra-logger applications.
    A. Relay output channels shall use latching-coil relays with a rated load of at least 5 amps at 250VAC or 5 amps at 30VDC.

- The data logger must have at least eight digital input channels to sense contact closures (relay) or voltage-to-ground transitions (to 24V).

- The data logger must have at least two RS232 (DB9) serial I/O ports.
    A. One optically isolated serial I/O port shall be configured as an external modem port.

B. Baud rate must be software selectable from 300 to 115.2k baud.

- Data format shall be 8-bit word, even, odd, or no parity, full duplex; 7-bit word, even, odd, or no parity, full duplex.

- The data logger CPU must be 50 MHz or faster.

- The data logger shall have an scan rate of 32 per second or better.

- The data logger shall have at least 512KB of EPROM for boot program storage.

- The data logger shall have at least 2MB of SRAM for configuration and long-term data storage.

- The data logger shall have at least 32MB of DRAM for operational data and code execution.

- The data logger shall have at least 4MB of Flash memory for program code storage.

- The data logger shall have at least 8KB of EEPROM for system settings storage.

- The data logger shall have at least one internal PCMCIA slot to support an optional extended configuration and long term data storage card.

- The data logger shall have a TCP/IP ethernet port, 10Mbps or better.

- The data logger shall have capability to direct link (using serial connection) remote user to Thermo Environmental Instruments Corporation's C and/or I -series analyzers using "TEI for Windows" software.

- The data logger shall be capable of digital communications with Thermo Environmental Corporation's C and/or I series gaseous analyzers and R&P TEOM and MetOne BAM continuous particulate monitors to facilitate air quality data downloading as well as instrument diagnostic information.

- The data logger shall have an integral 16 color liquid crystal display.
  A. Display size shall be 80 characters by 25 lines or larger.
  B. Display resolution shall be 640 X 240 or better.

- The data logger shall have an integral multifunction keypad for direct operator access.
    A. Data logger shall also have a port available for connecting a full function external keyboard.

- The data logger shall operate on 115VAC and have a battery backup to retain configurations and stored data for a minimum of 30 day in the event of an AC power failure.

- The data logger shall be capable of operating within a temperature range of 0 and 40 degrees Celsius and humidity range between 0 and 95% (noncondensing).

- The data logger must be 100% compatible with the Alabama Department of Environmental Management's existing central data polling/handling system. This system utilizes the Environmental Systems Corporation E-DAS AMBIENT for WINDOWS^{tm}, Version 5.52 software.